

## **HAMMOCK DISPLAY SHELVING**

### **BACKGROUND OF THE INVENTION**

[01] The invention relates to a new shelf construction and particularly to a shelf construction especially well adapted for the display of a variety of different kinds of objects having a greater front surface area than depth, for example books, periodicals, commercial catalogues and literature, records, CDs, DVDs, videos, pictures, photographs, plaques, decorative plates, linens, various items of clothing, and boxed games and toys.

[02] Conventional shelf units are generally designed primarily for storage and are poorly adapted to use for display. In the case of books, for example, volumes are shelved “spine-out” rather than “face-out.” Simply turning books to face out is problematic on conventional shelves, as the books are prone to slip off the shelves and are difficult to replace in the proper display position.

[03] Several constructions are conventionally used to solve this problem, but compromise mobility, stability, and/or suitability to diversity of displayed objects in so doing.

[04] Traditional wooden library-style display shelves require either a structural wall or a large back panel for structural support and are hence expensive to transport and install. In addition, a large amount of wood or pressed board is needed for the structural back support, which adds cost to the final unit. Additionally, because of their weight, a team of workers must generally professionally install display shelves. Finally, their bulk makes them cumbersome to move and reduces flexibility of re-positioning the unit.

[05] Conventional wire or Plexiglas easels or bookstands, on the other hand, tend to tip over and do not lend themselves for use where it is desirable for the displayed object to be

handled, examined, and repositioned. For example, the general public and customers do not readily reposition display copies onto bookstands in a careful manner. As a result retail book displays become messy leading to damage of books as well as higher labor costs needed to maintain the display area.

[06] Picture display ledges must be mounted to a fixed back wall and are thus unsuited to being repositioned. In addition, because the object to be displayed on such ledges leans up against the wall it can lead to surface marks on the back wall.

[07] Dedicated display units such as china display racks again must be mounted on a fixed back wall and are thus unsuited to being repositioned. In addition, such units are unsuited to other kinds of objects.

## **SUMMARY OF THE INVENTION**

[08] It is therefore an object of this invention to provide a display shelving unit which can be easily repositioned without compromising structural stability.

[09] It is a further object of this invention to provide a display unit that does not require mounting on a fixed back wall and can be freestanding.

[10] It is a further object of this invention to provide a display unit that is compact during transport to reduce crating, shipping, and storage costs.

[11] It is a further object of this invention to provide a display unit that is easy to assemble and disassemble.

[12] It is a further object of this invention to provide a display unit that has a minimum number of parts for ease of packing and shipping.

[13] It is a further object of this invention to provide a display unit that can be used for a variety of different kinds of objects to be displayed.

[14] It is a further object of this invention to provide a display unit which can be easily customized with respect to color to best offset the objects to be displayed, to harmonize with the larger environment, and to allow for seasonal or other thematic merchandising.

[15] It is a further object of this invention to provide a display unit that allows objects being displayed to be easily removed and replaced without damaging the visual integrity of the display or the object being displayed.

[16] It is a further object of this invention to provide a display unit allowing for shelves of various heights to accommodate different kinds and sizes of objects to be displayed.

[17] It is a further object of this invention to provide a display unit allowing for the unit to be constructed in a wide variety of widths to fit into different environments.

[18] It is a further object of this invention to provide a display unit that can be easily adapted to different widths.

[19] This invention, an illustration of an embodiment thereof being shown in Fig. 1, accomplishes these objectives by using the draping quality of fabric to create easel-like “hammocks” that cradle the objects to be displayed rather than rigid fixed shelves of wood, particle board or other solid unpliable material. Each unit consists of two rigid structural side panels with connectors for a series of pairs of poles, with the two members of each pair displaced from each other both with respect to vertical height and depth on the side panels, such that a fabric panel with pole hems or sheathes at top and bottom can be suspended between each pair of poles creating a hammock easel on which the object to be displayed rests at an angle for viewing.

[20] Because the structural stability of the invention is derived from the weight of the pairs of poles connecting the two side panels laterally, it is free-standing and thus can be used in a

much wider variety of locations than can a unit that must be mounted to a back wall. It can also be repositioned much more easily.

[21] Because the invention has no back wall piece, it can be compactly crated, stored, and transported with the two side panels packed flat and the series of poles wrapped on top of them with the fabric wrapped around them, thus reducing all costs associated with storage and transport.

[22] Because the invention uses fabric panels as easel shelves, it is simple to assemble and disassemble by slipping the poles into the sheathes in the fabric panels and then connecting them to the side panels.

[23] Because the invention uses fabric panels and has no back wall, it uses a minimal number of parts: two side panels plus two sets of poles, four connectors, and one fabric panel for each desired shelf. It can be assembled using only a wrench.

[24] The fabric hammock shelves can accommodate a wide variety of objects that have a larger surface area than depth such as books, periodicals, commercial catalogues and literature, records, CDs, DVDs, videos, pictures, photographs, plaques, decorative plates, linens, various items of clothing, and boxed games and toys. Each object to be displayed rests against the angled back of the fabric panel and is held in place by the lip formed by the lower pole.

[25] Because fabric is readily available in an enormous range of colors, materials and textures, the invention can be easily customized by the end-user or changed by selecting and changing the fabric used for the hammock easel panels: essentially any fabric or leather suitable for upholstery or any material that is flexible and strong enough to support the display items can be used.

[26] Because the hammock-like shape of the fabric shelves is fixed by the pole positions, objects to be displayed can be easily removed and replaced without the problems associated with bookstands and other display easels.

[27] The invention can accommodate shelves of different heights by altering the position of the pole connectors in the two side panels. The invention can be designed either with a minimal number of slots or connectors for fixed shelf heights or with a large number of slots or connectors such that the poles can be rearranged with different fabric panels to create shelves of different heights.

[28] The invention can accommodate shelving units of different widths in either of two ways: by changing the length of the poles and fabric panels or by using collapsible poles with fabric panels of different widths.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[29] The present invention can be more fully understood by reading the following detailed description of the preferred embodiments, with reference made to the accompanying drawings, wherein:

[30] Figure 1 is a first embodiment of a fully assembled display shelving system.

[31] Figure 2 is side view one of the side panels of the first embodiment.

[32] Figure 3 is the first embodiment that has not been assembled.

[33] Figure 4 is another embodiment of a fully assembled display shelving system.

#### **DETAILED DESCRIPTION OF THE INVENTION**

[34] One non-limiting preferred embodiment of the fabric hammock display shelving system of the invention is illustrated in Figs. 1-3. This embodiment consists of two wood side panels 50, 51 with pre-drilled holes 1-12 and slots 13-24; twelve poles 25-36, each with

four nuts (not all shown; some of the nuts are shown on the outside of panel 51 – see for example item 46); and four fabric panels 43-45. The wood side panels 50, 51 can be used for any desired shelving unit width within the range of 36” to 72”. The poles and matching fabric panels determine the width of the shelving unit, which can be manufactured in any width from 36” to 72”. The fabric panels have sheathes at the top and bottom to accommodate the poles and act as “hammocks” to hold display items D.

[35] In this embodiment, side panels 50 and 51 are approximately 9” wide at the top, 11.75” wide at the bottom and 84” high. The sides are tapered slightly from bottom to top. The holes and inward portion of the slots are each length A from the centerline of the panel. In this embodiment, A is approximately 3.5”. In this embodiment, the approximate vertical spacing of the holes and slots of panel 51 is as follows (distances for corresponding items on panel 50 are the same):

[36] Holes 7 and 8 are approximately 2” from the bottom.

[37] Hole 9 and slot 19 are approximately 13” from the bottom.

[38] Slot 20 is approximately 24” from the bottom.

[39] Hole 10 is approximately 27” from the bottom.

[40] Slot 21 is approximately 38” from the bottom.

[41] Hole 11 is approximately 41” from the bottom.

[42] Slot 22 is approximately 52” from the bottom.

[43] Hole 12 is approximately 55” from the bottom.

[44] Slot 23 is approximately 66” from the bottom.

[45] Slot 24 is approximately 78” from the bottom.

[46] The poles are made of iron and are approximately 1” in diameter. The poles threaded on both ends so that nuts can be screwed on the ends.

[47] The fabric is made of Textilene®.

[48] The fabric hammock display shelving system, as above described, can be packed in a compact, economical crate with interior dimensions of approximately 7' long, by 1' wide, by 6" deep. This compactness allows the fabric hammock display shelving system to be stored and transported more economically per linear foot of display shelving than fixed back traditional library shelves.

[49] The fabric hammock display shelving system illustrated in Figs 1-3 can be assembled as follows.

[50] One person can assemble and disassemble the system, although it is easier with two. Also, it is much easier and quicker to assemble the system on the ground as opposed to standing up.

[51] Step 1. Lay out all of the parts. Each shelf system consists of twelve bars 25-36, eight with fabric (26 and 29-35) and four without fabric (25, 27, 28 and 36), and two side panels (50 and 51).

[52] Step 2. Take the two side panels 50 and 51, each of which has holes and slots, and match up the holes and slots. The ends with two holes are the bottoms of the panel.

[53] Step 3. Insert proper length poles into the holes first (the slots come later). Start at the bottom and work up to the top. Hand tighten the nuts; do not tighten with a wrench until the end. The poles for the bottom holes (1, 2, 7, 8) 25 and 27 do not get fabric. The poles for the middle holes (3-6, 9-12) 26, 29, 31 and 33 do have fabric. Make sure fabric faces the correct way so that the "bad" side faces toward the wall when standing.

[54] Step 4. Then begin inserting the poles into the slots. Make sure the nuts are loosened. Insert a bar into the fabric sheath. Push into slot. Tighten the nuts.

[55] Step 5. When all poles are inserted and hand tightened, stand the unit up.

[56] Step 6. Tighten the nuts with a wrench.

[57] An alternate embodiment is shown in figure 4. This embodiment consists of two side panels 41 and 42 and three shelves 43-45. In this embodiment, there is not a support pole at the top (see for example pole 36 in figure 1). In addition, shelf 45 uses one of the bottom poles (see for example pole 25 in figure 1, which is not part of a shelf).

[58] Other alternate embodiments include systems with the following features. A fifth shelf could be added to the bottom of the system shown in figure 1 between poles 25 and 28. The slots in the side panels could be replaced with holes. The poles could be made of other metals, plastic or other materials that can be attached to the side panels. The side panels do not have to be tapered. The holes and slots do not need to be the same distance from the centerline.

[59] The poles do not have to be attached to the side panels with nuts; any other suitable attaching means could be used. For example, a cap could screw into the ends of the poles. In addition, the poles do not need to be round. For example, they can be shaped as a square. If the poles are not round, the holes and/or slots in the side panels would be shaped so that the poles could be inserted.

[60] Poles 25, 27, 28 and 36, which are not attached to fabric, provide support and stability to the system. However, depending on the size and shape of the system, more or less support poles can be used. For example, a system with only one shelf may not require any support poles (poles without fabric) because the poles attached to the fabric may provide enough support for the system.

[61] The invention can accommodate shelves of different heights by altering the position of the pole connectors in the two side panels. The invention can be designed either with a minimal number of slots or connectors for fixed shelf heights or with a large number of slots



or connectors such that the poles can be rearranged with different fabric panels to create shelves of different heights.

**[62]** The invention can accommodate shelving units of different widths in several ways, including changing the length of the poles and fabric panels or using collapsible poles with fabric panels of different widths.

**[63]** Although a preferred embodiment uses fabric panels for the shelves, other materials, including leather suitable for upholstery, thin plastic or synthetic materials, or any other flexible materials that is able to form a “hammock” can be used.

**[64]** While preferred embodiments of the invention have been described and illustrated above, it should be understood that these are exemplary of the invention and are not to be considered as limiting. Additions, deletions, substitutions, and other modifications can be made without departing from the spirit or scope of the present invention. Accordingly, the invention is not to be considered as limited by the foregoing description but is only limited by the scope of the appended claims.